LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

VOLUME IV JULY-SEPTEMBER, 1929 No. 3

JOURNAL

OF THE

Pan-Pacific Research Institution

A Periodical Record of Investigations Bearing on Problems of Food Production, Distribution, Conservation and Consumption, as well as on Public Health, and Race and Population Problems as Related to the Countries Bordering on the Pacific.

INDEX

2.—Sunlight in Hawaii.

3.—Ants, Bees and Wasps in the Hawaiian Islands. By Francis X. Williams.

5.—A Fisheries Agenda for the Second Pan-Pacific Food Conservation Conference. By Carl L. Hubbs.

7.—Leprosy. By N. E. Wayson, M. D. (A Paper prepared for the First Pan-Pacific Surgical Conference, Honolulu, August 14 to 24.)

12.—Surgery in the Orient.

13.—The Second Pan-Pacific Food Conservation Conference.

15.—On the Subject of Attending Medical Congresses. By Maria Paz Mendoza-Guazon, M. D.

16.—Surgeons Attending the Pan-Pacific Surgical Conference.

AT PRESENT PUBLISHED QUARTERLY AT HONOLULU, HAWAII
BY THE
PAN-PACIFIC UNION

More frequent publication as acceptable material is contributed.

Sunlight in Hawaii

By NILS P. LARSEN,
Director, Queen's Hospital, Research Department.
(From the Queen's Hospital Bulletin, May-June, 1929.)

The Castle Foundation subsidized for a two-year period the work on the analysis of sunlight. The preliminary work was financed by the Pan-Pacific Union. The need of such stpdy is apparent when we consider that in the last annual report of the Board of Health there is a picture of a row of tuberculous children getting "sun baths" at one of our sanitaria. The director of the sanitarium expresses in no uncertain terms the belief that sunlight is harmful in pulmonary tuberculosis. Besides this, we have popular opinions which vary all the way from considering sunlight as a degenerating influence to the belief which considers the sun as capable of curing all the ills of mankind. The wave of overadvertising of the ultra-violet lamps which has finally resulted in notes of warning being issued cautioning people against overexposure is another phase which suggests the need of more accurate knowledge.

The first consideration was an attempt to find an easy practical method of determining the quantity of ultra-violet in the sunshine. Many methods were tried, but the oxalic acid method of Anderson was considered the most accurate and gave the most consistent results. This was also tried by workers in different laboratories around the Pacific, and amazingly consistent results were obtained by the different workers. This seems a practical method to use whenever sunlight therapy is to be given. During the course of two years various types of curves were produced, i. e., daily variations, monthly variations and yearly variations. The most interesting is the sudden rise in ultra-violet between February 15 and March 15, and the sudden drop in September. Although the skin is not considered a good indicator for ultra-violet due to its marked variation in ability to react, nevertheless one experiment showed that early in February one hour's exposure failed to produce erythema, whereas in March, 20 minutes exposure gave marked erythema. Naturally, therefore, the sunbaths between September and March are not going to give the same results as baths between March and September. Other interesting observations were the type of curves on different days, i. e., on certain types of cloudy days the ultra-violet curve was high. The practical application of this is evident. Sunshine must be used sensibly and its variations must be taken into account, whether it is by a tourist on the beach trying to tan or by a patient in a hospital. Only in this way can a strong therapeutic agent be used in any degree of accuracy.

Another interesting observation to which the method was applied was the comparison of results given by different therapeutic lamps. These vary a great deal in new lamps as well as in the same lamp after running for a length of time.

A preliminary report of this work was given before the Hawaiian Academy of Science by Lois Godfrey, who has been engaged in making these measurements. The full report has not been published.

Ants, Bees and Wasps in the Hawaiian Islands

By Francis X. Williams

Experiment Station, Hawaiian Sugar Planters' Association.
(Address before the Pan-Pacific Research Institution.)

Ants, bees and wasps belong to the Order Hymenoptera. A typical hymenopteron has four membranous wings, the mouthparts fitted both for chewing and for lapping, the female is often armed with a sting, the metamorphoses or changes that take place during growth are complete, there being an egg, a larvel or grub, pupal and adult stage, and finally, the best brains among insects belong here. Excepting the termites or "'white ants," quite unrelated to true ants, there is no real cooperative social or community life among insects outside the order Hymenoptera. All ants are social, from several to a great number of individuals comprising one nest; so also are many bees and wasps; the non-social species are termed solitary bees and wasps because each mother attends entirely to her own brood, whether it be a clay cell, a hollow twig or in a tunnel underground. Forms intermediate between social and solitary occur.

In a great measure because the Hawaiian Islands are so remote from large land masses, comparatively few insects have by natural methods reached these shores, and the successful arrivals, usually of moderate or small size, have in some cases given off new species that are more frequently found in the mountains where they, often rather delicate, suffer the least molestation. Other insects are more hardy or are recent arrivals, coming here in the same manner as the first or through commerce. These have not changed. Thus we have endemic insects, i. e., those that are found nowhere else than in the Hawaiian Islands, and those that are immigrant or exotic. Examples of the latter may be found in the European cabbage butterfly, the widely ranging monarch butterfly, and most of our pests.

The ants in Hawaii are nearly all immigrants. We have between 25 and 30 species, but it seems that only one of these, a species of *Ponera,* is found nowhere else in the world. There is then little of interest in our ant fauna. In some parts of the tropics it is safe to say that as many as 150 species of these insects may be found in an area equal to or smaller than that of the Hawaiian Islands. We have no very large ants, nor species making nests in trees, nor living almost entirely underground. Ours are all rather commonplace.

The ponerine ants usually live in small colonies and are carnivorous. In Hawaii, *Leptogenys falcigera* var. *insulrais* captures the small land crustacean known as sow bugs or armadillo bugs and occasionally also, small millipedes, the bleached remains of the prey being often strewn about the entrance to the ants' nest. Of Myrmicine ants, *Phidole megacephala* is the common small dark brown ant of which some of the workers have very large heads. It is our dominant species and has exterminated or considerably reduced many of the insects of its territory, which extends well up in the mountains. *Phidole* is probably largely responsible for the scarcity of houseflies here; so while it is at times a pest it does a deal of good as well. *Solenopsis gemminata,* the fire ant stings painfully; it is paler brown and it also has some workers with large heads. It inhabits restricted portions of the lowlands.

Our large *Camponotus maculatus* var. is a very active brown ant of nocturnal habit, that is sometimes a nuisance when it nests indoors. While usually living in wood it utilizes old cavities or tunnels there and is not a true borer. The *Prenolepis* ants, among others in the winged form, are often a nuisance at lights.

We have more than 60 kinds of bees

here and most of these are peculiar to the Islands. The native ones belong to the genus *Nesoprosopis* that are usually rather small polished black (some in part red or yellow) insects most common in the mountains and where any observant person may see some of them feeding at the flowers of the ohialehua, naio, etc. They are solitary bees that nest in hollow twigs and in the ground, and the mother bee herself constructs the cocoon of her offspring. The leafcutter bees (*magachile*) cut neat little discs out of the leaves and petals of plants and use them in constructing their cells. But one species (*Megachile schauinslandi*) utilizes a gummy material instead of leaves and plugs up her cells in nail holes, etc.

The correct name for the large shining black bee (the male is tawny) that bores holes in redwood and other timber is Carpenter bee (*Xylocopa varipuncta*). It is often erroneously referred to as a bumble bee; but bumble bees differ a good deal in structure and besides, are true social insects and are not found here.

The ordinary honey bee (*Apis mellifera*) has been here for a long time and is the most numerous of bees at flowers. Their combs can be found in hollow trees and among lava rocks.

Native stinging wasps that make nests and store them number 140 or more species. Most of these are peculiar to the Islands.

Sceliphron caementarium, the common American thread waisted mud-dauber, often seen at puddles, makes the unsightly nests of mud that so often disfigure lanai ceilings, eaves, etc. The cells composing these masses of mud are stuffed with spiders, food for the wasp larva which eventually spins a cocoon and produces an adult. The genus *Pison* consisting of three foreign species, all spider-catching mud-daubers, of which one makes neat little roundish cells in some angle or crack.

Nesomimesa and *Dinomimesa* are very handsome, slender black wasps native to the forests; they store leafhoppers in cells underground and, formerly, when the sugar cane leafhopper was very numerous, *Nesomimesa* used to frequent the more upland cane fields in search of these insects.

The larrid wasp *Notogonidea subtessellate,* a Philippine species, stores her tunnel with paralyzed field crickets; *Larra luzonensis* imported from the same country, preys on mole crickets, which it stings to temporary paralysis, so that she may lay her egg on it; the cricket recovers and buries itself but in a few days is overcome and eaten by the *Larra* grub which forms its cask-like cocoon in the cricket's burrow. *Silaon rohweri,* a very small active wasp inhabits the dry lowlands and preys on bugs.

The 20 or 30 species of Crabronidae are all native insects and prey on flies. It was observed that full fed *Crabro* larvae went into a resting period, their circulation at that time being considerably retarded.

Dolichurus stantoni, the little cockroach wasp, imported from the Philippines, stores small cockroaches in some cavity which she discovers after she has captured and subdued her prey. This wasp prefers the mountains. It is shining black and very active.

Anoplius luctuosus, a blue black spider wasp, that constantly flicks her wings, is a western United States insect that was first observed here in 1910.

Scolia manilae imported in 1916 from the Philippines has a wide lowland distribution. It has reduced the *Anomala* cane-root grub to harmless numbers and also attacks the grub of the Chinese rose beetle (*Adoretus*). *Scolia manilae* is black and yellow and may often be seen circling almost in swarms over bare areas in cane fields.

Over 100 species of native *Odynerus* wasps are found in our Archipelago. All prey on caterpillars. They nest in hollow twigs, in porosities in lava, in old mud-dauber cells, in the soil, while one, *Odynerus oahuensis,* makes neat little mud cells which it suspends from rootlets ex-

posed in earthen banks, in rolled up leaves, etc. These wasps are mainly blackish. *Nesodynerus rudolphi* is conspicuous because of its deep irridescent blue wings and shining black body.

Pachodynerus simplicicornis, an American insect first noted here in 1911, has tawny yellow wings and a black-yellow body. It is very common in the lowlands.

The three species of *Polistes* make the familiar pediceled paper nests under eaves, palm leaves, etc. They are good stingers and destroy many caterpillars, which they feed day by day to their offspring. *Polistes aurifer* is parasitized by a strepsipterous insect that is often seen protruding sac-like from between the segments of the abdomen, which is thereby distorted.

Vespa occidentalis the yellow and black hornet is an immigrant from the west coast of America. Thus far it occurs only on Kauai and builds a social nest underground.

The Bethylidea are small black wasps very numerous in species. One kind *Epyris extraneus,* attacks false wireworms, others prey on small caterpillars and the larvae of beetles.

The true parasitic wasps differ structurally from the predaceous species we have been referring to and, in addition, the parasitica make no nests for the reception of their prey but leave them in situ.

Suggested Agenda for the Fisheries Section of the Second Pan-Pacific Food Conservation Conference

By Carl L. Hubbs,
University Museum, University of Michigan

I. Systematic ichthyology.
  (a) General survey of fish fauna of Pacific.

II. Racial investigations.
  (a) Analysis of local races of the important food fishes.

III. Life-history investigations.
  (a) Determination of spawning habits, seasons and grounds; protection of spawning fish.
  (b) Location of nursery waters; protection of young.
  (c) Investigation of growth-rate of important species; determination of most satisfactory size for capture.
  (d) Determination of size and age at breeding; protection through at least one spawning.
  (e) Continued analysis of age composition of commercial catch; determination of depletion.

IV. Migrations of commercial species, determined by—
  (a) Racial studies.
  (b) Marking experiments.
  (c) Behavior experiments, etc.

V. Oceanographical surveys—
  (a) As related to migrations of fishes.
  (b) As related to success of spawning.
  (c) Therefore as related to real or apparent depletion of fish stock; determination of natural causes in fluctuation of fishery yield.
  (d) As related to predictions as to future yield of fishery (predictions based on natural cycles of abundance and on differential abundance of larvae).

VI. Fishery methods (chiefly experimental studies).

(a) Determination of efficiency and harmfulness of different methods of fishing, different types of boat or gear, different sizes of mesh, etc., in use or proposed.

(b) Location of new fishery grounds, by experimental fishing.

(c) Experimental determination of depletion—by changes in yield per controlled unit of effort.

VII. Statistics.

(a) Development of adequate and uniform statistics of fishery yield by unit of effort.

(b) Analysis of these statistics to determine status of fish supply.

VIII. Recommendations for regulations.

(a) Determination of means for avoiding depletion or for rehabilitation of fisheries.

(b) Suggestions for international treaties.

IX. Introduction of new fishes.

(a) Discussion of desirability of proposed introductions.

(b) Consideration of possible spread of noxious parasites by introductions.

(c) Arrangement for exchange of shipments.

(d) Discussion of introduction of fishes for mosquito control..

X. Fish culture (food, game and ornamental fishes).

(a) Determination of best methods of retaining brood stock, fertilizing and hatching eggs; of proper time and stage for planting; of good methods of transportation; of proper habitat for planting.

(b) Discussion of pond culture; pond construction; food; fertilization of ponds; efficacy and danger of sewage treatment of ponds.

(c) Study of fish diseases.

XI. Preservation and use of fish products.

(a) Discussion of refrigeration on ship; of cold storage on shore; of sanitation in handling the fish.

(b) Discussion of extention of output or improvement in methods of fileting, canning, etc.

(c) Discussion of improved, transporting and marketing conditions.

(d) Discussion of means for extended market for fish, especially previously unused species.

(e) Discussion of utilization of by-products.

(f) Discussion of advisability of using edible fish for fertilizer.

XII. International coordination in Pacific fisheries research, in regard to—

(a) Exchange of material for investigations.

(b) Exchange of literature.

(c) Exchange of ideas on methods of investigation, on research projects, etc.

(d) Closer relationships between fisheries colleges, laboratories and stations.

(e) Possible organization of investigators.

It is hoped that other scientists will send in suggestions for agenda for the different sections of the Second Pan-Pacific Food Conservation Conference, to be held in Honolulu, August, 1931. The full tentative agenda will be mailed to anyone on request.

Leprosy

By N. E. WAYSON,
Surgeon U. S. Public Health Service; Director, Leprosy Investigation Station.
(Prepared for the First Pan-Pacific Surgical Conference, Honolulu, August 14-24, 1929.)

Leprosy is a disease of some importance to all the countries bordering the Pacific Ocean, and is of interest to all countries. There is, however, only a relatively small amount of definite knowledge concerning its origin, cause and manner of dissemination. Hence, discussions of these phases of the ailment must be qualified by the legal phrase, "to the best of our knowledge and belief."

It is in all probability an historically old affection, and has prevailed and continues to persist, throughout the known countries of the earth. It has been recognized and studied by physicians since the very early days of medicine, and its ravages were observed and chronicled by writers whose works antedate the Christian era by centuries. In the Christian countries, much of the current information relating to it is that which has been handed down through teachings of the Bible. There is little doubt in the minds of students of natural history and of the medical sciences, that the ancient Hebrews had leprosy, but it is much more evident that many conditions were called "leprosy" by religious priests and chieftains who likely had but scanty knowledge of any disease. This latter conclusion seems entirely warranted by the establishment that much of the so-called leprosy of more recent ages has been tuberculosis, syphillis, and other chronic affections of the skin. In fact, leprosy is often difficult of diagnosis to physicians of modern training. In the book of Leviticus, a systematic effort was made to prescribe rules for the recognition or diagnosis of the disease and for its control, by the priests. Though the authors were likely much influenced by religious traditions, some of their rules are considered valid today in the light of modern experience in the control of communicable diseases. The chief among these is the principle of separation of the sick from the well by segregation, isolation, or quarantine.

The spread of leprosy over the world followed the great movements of civilizations. Observed in earliest times in India and China, it was reported later in the Mediterranean countries, and from those was spread through Europe by returning soldiers and religious crusaders. It was in all likelihood brought to the United States and Canada in colonial days. It is present in the southeastern part of the former country, and prevails more actively in centers in Louisiana. In later years it has been brought by immigration to the north central states, to the southwestern states and the Pacific coast. The manner of its spread and the time of its first appearance in the Sandwich Islands, now the Territory of Hawaii, are both conjectural. It had, however, become so widespread through the people of these islands by 1860 as to incite attention and activity toward its control. The Hawaiian people appear to have been highly susceptible. This susceptibility may indicate that the disease had not been amongst them until shortly before it became widespread, since it has been noted that the first visitation of any communicable disease to a people may result in both its rapid spread and virulent manifestations. The degree to which the Hawaiian people were affected was most severe. Fifty years ago there were about two known lepers to every hundred of the people, and though the disease was not entirely restricted to the Hawaiians, and those with whom they had married, it was practically so limited. The relative magnitude of the affliction can be appreciated by transposing the proportions to the population of continental United

States, when it will be seen that approximately two million people would have been affected, or numbers almost equal to those who developed influenza during the great epidemic of 1918-1919. Since 1890 the annual number of new admissions amongst those of Hawaiian strain has continuously though slowly fallen, but both the number and percentage of known cases amongst them remains at a distressingly high epidemic level.

Since the discovery in 1872, by a Norwegian physician, Gerhard Armauer Hansen, of a germ or bacterium in the tissues of practically all of those afflicted, evidence has accumulated to show that the disease is infectious, and is communicable from one person to another. This evidence is, however, still a subject of investigation by modern scientific methods, because the bacterial parasite has not been satisfactorily cultivated within the laboratory, and because the disease has not been reproduced in man or in animals under circumstances which are convincing.

The infection is believed to be produced by the entrance of the Bacillus of Leprosy (Bacillus lepra or Mycobacterium lepra) into the body through the membranes of the respiratory tract, or through the skin. Some students believe the entrance may be through the gastro-intestinal tract. It will be immediately apparent that these three modes of entrance to the body tissues practically exhaust the possibilities.

In common with most communicable diseases it develops in early life, but is recognized most frequently in adolescence and between the ages of twenty and thirty years. Wherever it has been statistically reported, it has been found more prevalent in males than in females, in the ratio of roughly two males to one female.

It has not been shown to be hereditarily contracted, as was thought during that period of medical history during which many diseases were believed to be thus developed. However, it may be found that certain family strains are more susceptible than others.

The hypothesis that the eating of fish caused the disease has also been abandoned as disproven. It has been observed that the indiscreet eating of raw and poorly cured fish, as well as other dietary indiscretions or abuses, such as the consumption of alcohol, are frequently coincident with fresh eruptions or paralysis in the individual. In fact, the endemic centers of leprosy are in large part among those people whose diet is inadequate or poorly balanced when appraised by modern conceptions. However, sufficient evidence has not been reported which would justify a conclusion that there is anything inherent to a particular dietary in its causation.

The manner of communication from one person to another is believed to be through contact with one who is affected. Such contact is, of course, favored through the daily intercourse of family life, and is made more probable in families living amidst crowded and promiscuous conditions. The children of lepers, who remain in the household family, develop leprosy with much greater frequency than do blood relatives who do not live in the same household. When such children are removed immediately after birth from the household of their parents, and reared amidst surroundings without subsequent contact with lepers, they rarely, if ever, develop the disease.

The prominent manifestations of leprosy are the result of involvement of tissues of the body which are developed from a common developmental source in the embryo, namely the skin and the nervous system.

The first evidence of the infection may appear in the skin as a red spot or papule (pimple), a swelling such as might follow an insect bite or a bee sting, or an outbreak such as is seen in severe urticaria (hives). These findings may persist, develop, and spread, or they may entirely disappear within a few days to

a few weeks, only to reappear at a later date in the same or some other form.

The subsequent development may progress for many years, but is usually characterized by periods of active evolution, and by those of retrogression and of quiescence, or even of apparent arrest.

During this course the location, arrangement, and character of the changes in the skin may evolve in a manner to simulate those found in several other diseases. The color of the individual skin lesion (manifestation of change) may vary from that of a faint pink through different shades of red, including a copper color and a bluish red. Or they may be of shades from a light fawn to a dark brown. In older diffuse lesions there may be a greyish tinge which suggests a deposit of metallic pigment under the skin. The borders of the lesions are usually roughly circinate (ring shaped), annular (ring within a ring), circular or oval, or vermicular (resembling a crawling worm). They may be sharp and discrete, or may fade gradually into the color of the surrounding skin, or may be serpiginous (scaly, resembling a ring worm.) They may vary in size from that of a mosquito bite to that which covers an entire thigh and leg, or half the trunk of the body. Their shape may be that of a spot flush with the skin, or one slightly elevated above the skin surface, a wheal (hive), a papule, a nodule (hard rounded lump), a bleb or bulla (small or large blister). They may coalesce, or may combine several of the above characteristics during their development.

The lesions may occur in any part of the glabrous (that without prominent hairs) skin, but are more common in that of the face, ears and extremities, with a greater predilection for the back and extensor surfaces. They may appear singly or in crops, and may disappear in a few days or persist for years.

Their disappearance is usually marked by the formation of a brownish spot and some scarring, or they may leave a white spot. Their continuance is usually accompanied with periodic swelling, reddening, browning and scaling. Large areas of skin may become thickened and waxy or leathery.

The circulation in the skin is deranged in many cases to a degree which causes the hands and feet to be swollen and often bluish in color. This disturbance of circulation and the changes of the cells of the skin and nerves favor ulcerations in old and persistent lesions, and both ulcerations and mutilations of fingers and toes.

The changes in the nervous system are characterized by paralyses and atrophy (wasting) of muscles, and atrophy of bones, and by the loss of sensation in some portion of the skin. These changes may develop with almost the same rapidity and with like results as those of infantile paralysis. An eyelid, a finger, a hand or a foot may become paralyzed within a few days during a course in which the affected part becomes swollen, and the individual has fever. On the other hand they may gradually develop through a period of months, and may be accompanied with other symptoms of neuritis. The type of the paralysis is peripheral (such as occurs in infantile paralysis). The nerves most often involved are those supplying the lower eyelids, the lips, the fifth finger, and those to the muscles which raise the toes and foot, and turn its outer border upwards.

Accompanying these paralyses there is always a loss of sensation in the skin supplied by the affected nerves. Due to this loss of sensation the affected individual often injures his skin by cuts, abrasions and burns, and the resulting wounds are slow to heal, or become deep ulcers, extending even to an infection and destruction of bone.

The action of normal muscles is balanced or coordinated, so that when one contracts or pulls, others pull equally, or relax. When a muscle is paralyzed or permanently relaxed, the balance and coordination are lost, and the action of its opponent is exaggerated. This action re-

sults in a fixed or limited position of the member in which the muscles are attached, for example, the finger remains bent into the palm. In the paralyses of leprosy the fingers and toes are often left in these fixed or limited positions (contractures), or the lack of muscular balance and support result in a drooping of the affected member, such as an eyelid or angle of the mouth, a hand, or a foot. The gaping eyes, drooping twisted mouths, bent and wasted hands and feet are the results of the infection, and inspire fear of it, though at this stage its communicability may not be any more likely than the communication of the infection of infantile paralysis from its paralyzed, and wasted, twisted victim. Likewise, some of the ulcerations of the skin are probably not a source of dissemination, but others doubtless may be.

The communicability of the disease during its active stages, its occasionally acute course, or its progress through many years, and its ultimate crippling, mutilating results, which are often intensified if neglected, indicate the necessity of providing two rather distinct types of institutional care and treatment. Hawaii concerned herself with such institutions sixty years ago. In 1866 a settlement was provided on a small peninsula of the island of Molokai. This peninsula contains about 5,000 acres of relatively level land, and is separated from the remaining two hundred and sixty square miles of the island by a precipitous cliff more than 1,500 feet high, and separated from the other islands by several miles of the open sea. Here in Kalaupapa, a rural community almost insularly isolated from the malicious, the meddlesome and the curious, the leper can live as he would live in any village within the Territory. His physicians live in the settlement within easy access. If he becomes helpless he may be housed in a community building, or if desirable, and desired by him, he may be hospitalized. He is required to conduct himself in accordance with the ordinary rules and laws governing good civic behaviour, and in event he does not he may be brought by an afflicted sheriff before an afflicted judge, both citizens of the community. The Territorial government furnishes through a superintendent under the supervision of the Board of Health, his housing, his clothes, his ration, and his physicians, but he or his friends buy his automobiles, of which there are an average of one to every ten or twelve patients, aside from those belonging to the authorities. He has a choice of the church in which he will worship, and has an opportunity to entertain himself in social and athletic gatherings, and at the movies. His greatest hardship, and his cross, aside from his sickness, is his enforced separation from his family and friends. This too, is ameliorated to some degree by permission extended his kith and kin to visit him periodically under restrictions for the protection of the health of those in the settlement, the visiting friends and families, and the public, to whom these latter return. Also, he may marry one similarly afflicted within the community, and live in his home a normal conjugal life. His children which may be born are, however, separated from him immediately after their birth, and for their further protection are reared in an institution, whose residents are of like origin.

When a patient has recovered to a degree of an apparent arrest of his condition, and he desires to return to the general community, he is examined by three medical representatives of the Board of Health, and may be released under supervision and direction of the latter. He is required to report for examination, and for such treatment as the Board may consider proper until the Board is assured of his recovery.

It is to this settlement that those lepers are sent whose progress towards convalescence is slow, or who have become a burden to their friends, and objects of ridicule or abhorrence to their fellow men. However, before being made by law an inhabitant of Kalaupapa, every individual

suspected of or having leprosy is legally entitled to remain for at least six months (unless he elects to go to the settlement sooner) in another type of institution, for observation and study towards making the diagnosis scientifically accurate, and to submit to such reasonable medical treatment as may ameliorate or arrest his disease.

This institution, known officially as the Kalihi Hospital, acts as the Receiving Station for the Territory, and is conducted more in accordance with a sanitarium for contagious disease. It is more centrally located than the Settlement, and is within a few miles and easy motor transportation of the docks of Honolulu, the main port of the Territory. This location facilitates study and observation by the representatives of the Board of Health, as well as the transportation of the patients, since Honolulu is the junction point of all the inter-island communications.

The patients in this institution remain segregated from the public, by law, during the active stages of their disease. The distance from the more metropolitan districts, and the physical arrangement within an enclosed area of about five acres, as well as the governmental regulations, assist in this segregation and spare them from most of the gawking curious, but at the same time permit of visits from their family and friends under restrictive precautions. Here their needs of housing, clothing and meals are similarly furnished by the Territory, under the administration of a matron, under the supervision of the Board of Health.

Medical attention and study are carried on through, and in cooperation with, the Board of Health by medical officers of the United States Public Health Service. These officers are detailed by the Surgeon General to the Leprosy Investigation Station to direct, and participate in investigations of the disease and its treatment. They are the hospital physicians delegated by the Territorial Board of Health. The buildings of the Leprosy Investigation Station belong to the Territory and are wtihin the grounds of the hospital, but outside of the enclosed portion.

To Kalihi Hospital those suspected of being infected with leprosy are brought for examination. They have the privilege of being examined by three physicians, one of whom they may select, one of whom is selected by the Board of Health, and the third of whom may be selected by the former two. In lieu of this examination they may elect to accept the diagnosis and recommendations of the physicians in attendance at the hospital. Provisions are made for subsequent examinations in event of doubt. If they are cases of leprosy, they are admitted to the hospital for observation, study and treatment, in accordance with the provisos for transfer and release discussed previously. The exception made to the above applies to age. In practice there are no transfers to the Settlement of leprous children of fifteen years or under, except by request of their parents residing in the settlement, or under unusually impelling circumstances. During their residence in Kalihi Hospital, the children of school age are given their schooling in accordance with the public school curriculum.

The governing officers of Hawaii in 1865 canvassed the governments and prominent physicians of the various countries interested or concerned for opinions as to the cause, nature, and methods of treatment of leprosy. In 1879 the Kalihi Hospital was organized to put in practice those methods of treatment which are most advanced. This policy has been continued and the Territorial Government has devoted millions of dollars to the care and treatment of those having leprosy. For the past twenty-five years the United States Public Health Service has assisted in these investigations and treatments.

The nature of leprosy and the restriction of the development of the infection to man, with the inability to produce it

in animals have proven to be insurmountable obstructions, thus far, to the development of a specific therapy, or one scientifically administered and controlled.

About four hundred years ago the Chinese used a nauseating, irritating oil, since recognized as Chaulmoogra oil, and later determined to have a chemical construction different from that of most oils. This oil was reputed to have medicinal value in leprosy. In more modern times it was injected under the skin, or into the muscles, but its administration in this manner resulted in such painful reactions that it could not be continuously given, though the treatment with it was reported to be beneficial. Subsequently a more refined, more fluid and less irritating product was made by the chemical substitution of ethyl or spirit alcohol for the glycerine which is in the oil. This product is known as the ethyl esters of the acids of chaulmoogra oil. This and other preparations of chaulmoogra and other oils of similar chemical architecture are used along with other drugs as medicines in the modern treatment. The treatment and control of leprosy and of tuberculosis have some features in common, and the experience gained in treating leprosy in Hawaii and in other places suggests that some of the methods used in combating tuberculosis may be profitably employed in the control of leprosy. Leprosy is conceded to be self-arresting in a definite percentage of cases, both in relatively early and in later stages, and can be brought to quiescence and arrest in an additional percentage of cases which have not advanced to a degree in which too much destruction has taken place. This latter can be better accomplished by not relying on the development and administration of an arcanum or sovereign remedy, but must include careful clinical and laboratory studies and investigations directed towards the diagnosis of early stages, and towards treatment; and the application of modern methods of general medical and hygienic principles within a hospital or sanitarium. To assist in preventing recurrence, this hospital treatment and care must be systematically followed up in those cases who recover to a degree which permits of their return to their homes and former surroundings.

Surgery in the Orient

Surgery in the Orient will be represented at the Pan-Pacific Surgical Conference convening in Honolulu in August, 14 to 24, by men from China, Japan, and Korea. Dr. F. C. Yen, President of the College of Medicine, National Central University, Shanghai, will give a talk on "Medicinal Education in China," and will bring with him papers from other Chinese surgeons who are unable to attend. Dr. Kenelm Digby of Hongkong will give a paper on "Demonstration of Special Splints for Fractures of the Femur and Humerus," and also one on "Intraphepatic Stone Formation in Hongkong."

Dr. Makoto Saito of Nagoya and Dr. Tei Shin Seo of Chiba, both members of the Japan Surgical Association, will present papers on "The Röntgenological Diagnosis of Cerebral Tumor," and "Surgery of the Haematopoietic Organs with Special Reference to Sphenomegaly due to Schistosomiasis Japonica and Eumyceten," respectively.

Dr. Y. S. Lee, Professor of Surgery, Severance Union Medical College, Seoul, Korea, will present a paper on "Amebic Liver Abscess," and will take part in the discussion on Tubercular Joints.

Pan-Pacific Food Conservation Conference

From many quarters letters are coming to the Pan-Pacific Research Institution with suggestions as to the final agenda for the Second Pan-Pacific Food Conservation Conference in August, 1931 (Honolulu). One of the most interesting and constructive of these is from Dr. Carl L. Alsberg, director of the Food Research Institute at Stanford University and a participant in the first Food Conservation Conference. Dr. Alsberg is on the editorial staff of the Journal of the Pan-Pacific Research Institution. His letter is as follows:

I have your letter of April 9 in regard to the Second Pan-Pacific Food Conservation Congress to be held in Honolulu in August 1931. I have read the proposed agenda, printed in the April-June number of the Journal of the Pan-Pacific Research Institution, enclosed with your letter. As an all-inclusive plan covering almost everything in the field of food production, distribution, and conservation in the Pacific area, the agenda and the several suggestions are wholly admirable. The only question that arises in my mind in connection therewith is whether so universal a plan gives the best practical results. A conference of this kind, at least so far as my experience goes, may be operated on one of two plans. One is to divide the field into an appropriate number of sections, each representing a relatively limited field of scientific work. Once these questions have been delimited, the next step is to secure distinguished scientists as chairmen. The next step is with the help of the chairmen to get a large number of scientists to come to the meeting for the presentation of papers of a scientific character, the subject matter of which must be left to the men who read the papers. It will ordinarily be a report on original research done by these men and their associates. This is the method of the international scientific congresses. It has the advantage that the papers represent original work, much of it of lasting merit. It has the disadvantage that the entire field is not covered, but this to me is not a disadvantage, since under any plan it is impossible to cover a whole field. There is the further disadvantage that the papers must of necessity be highly technical, and therefore of interest principally to other specialists, wherever they may be located. This disadvantage may be counteracted to a considerable extent by arranging for joint sessions of sections dealing with related fields, by symposia, and by a few general sessions at which a few of the elder statesmen among the scientists present a few addresses of a general character.

The second plan is essentially that proposed in the tentative agenda. To make it successful and to carry it out completely, it is necessary to invite a whole series of men to prepare papers on specific subjects, the choice of men and subjects being so arranged as to cover the whole field. If this isn't done, a large portion of the field will remain uncovered, and there will remain sections with hardly any attendance except that of the chairman and secretary. This happened in one or two sections, as you will recall, at the last Pan-Pacific Food Conservation Conference. I refer, for example, to the section on transportation. This second plan, while it looks better than the first on paper, has the disadvantage that papers specially prepared on subjects selected by others than the author are apt to be hack work, superficial in character, and platitudinous. Their permanent value is not likely to be as great as that of scientific papers reporting the original work of the authors.

In short, I am inclined to think that the most advisable plan is to make the conference a special type of international scientific congress, devoting itself primar-

ily to problems of agricultural food production, food transportation, distribution, and conservation. This will, I fear, involve some duplication of the field of the Pacific Science Congress. This, in any event, is unavoidable, and I can see no harm in such slight duplication as may arise. *Si duo faciunt idem non est idem.* There remains for the Food Conservation Conference, even if conducted as a scientific congress, an ample field not covered by the Pacific Science Congress.

You ask me to suggest names of food scientists with whom it would be advisable for you to correspond. I am not competent to suggest names in all fields. The following is a list arranged according to certain fields: (A comprehensive list was submitted.)

The scientists in each section have been asked to submit photographs or suggestions for a series of photographs with captions that may be transferred to films for projection on the screen, the pictures and captions to tell the story of one of the subjects to be discussed at the conference. Mr. Charles M. Bice of the University of Hawaii submits a list of possible pictures in Hawaiian poultry industry there, in the hopes that agriculturalists in Pacific lands will submit similar suggestions for lists on the subjects in which they are particularly interested. Mr. Bice's suggestions are published herewith:

Poultry Production in Hawaii

I. Incubation of the eggs
   - (a) Choosing the incubator
   - (b) Selecting a desirable incubator cellar
   - (c) Regulating the incubator
   - (d) Selecting hatching eggs
   - (e) Caring for the hatching eggs
   - (f) Turning the eggs
   - (g) Testing the eggs
   - (h) Hatching with hens
   - (i) Pedigree hatching

II. Brooding the chicks
   - (a) Preparing brooder house and heater
   - (b) Feeding the chicks
   - (c) The chicks on range or in confinement
   - (d) Brooding with the hen
   - (e) Mosquito-proof houses and runs

III. Summer Care of Young Stock
   - (a) Selecting the Range—Location and Site
   - (b) Supplying shade
   - (c) Location of colony houses
   - (d) Separating the sexes
   - (e) Keeping the colony house clean

IV. Poultry House Construction
   - (a) Types of houses in Hawaii
   - (b) Interior fixtures

V. Feeding the Layers and Breeders
   - (a) Feeding the flock
   - (b) Supplying water to the flock
   - (c) Cutting and growing alfalfa for poultry

VI. Culling the Laying Flock
   - (a) Culling the birds not laying
   - (b) Comparing good and poor hens
   - (c) Finding the laying pullets
   - (d) Selection of pullets for the laying house

VII. Preparing Eggs and Poultry for Market
   - (a) Gathering the eggs
   - (b) Candling market eggs
   - (c) Grading market eggs
   - (d) Fattening market birds
   - (e) Killing market birds
   - (f) Selling market birds at the market

VIII. Preparing Birds for the Show
   - (a) Selecting birds for show
   - (b) Judging the birds
   - (c) A view of the show

IX. Breeds of Poultry in Hawaii
   - (a) Leghorn Flocks
   - (b) Rhode Island Red Flocks
   - (c) Plymouth Rock Flocks
   - (d) Australorp Flocks
   - (e) Minorcas
   - (f) Ducks
   - (g) Geese
   - (h) Turkeys
   - (i) Pigeons

On the Subject of Attending Medical Congresses

(An Editorial by Dr. Maria Paz Mendoza-Guazon, of the University of the Philippines, in the Journal of the Philippine Islands Medical Association, December, 1928.)

Probably no other science is so subject to continuous change as is the medical science. Practitioners and research workers engaged in this field of study must be alert to keep abreast with the discoveries and changes that are announced almost every day. One cannot find the time to read even the abstracts of the most important articles that are written on medicine and, to obviate this difficulty, physicians and workers come together to discuss them and exchange ideas and methods. Thus, medical meetings enlighten those who attend them and stimulate the thirst for inquiry.

In a country like ours, isolated from the great workers, and where news arrives almost a month old, the need of meetings is felt the more. However, meeting the same persons, whose trend of ideas probably is the same as ours, over and over again is not enough. We need to know other workers from other countries, visit their clinics, study their methods of procedure, and hear their lectures in order to impart them to our countrymen on our return. This is the one way to help push the progress of the medical science in our country. Besides, by so doing we render a service to our country which, as every one knows, is little known abroad. Therefore, by participating in the numerous congresses to which we are cordially invited now and then we accomplish two things: We contribute toward making our country and its people known, and at the same time come to know the peoples of other countries. In the last Pan-Pacific Women's Conference, which I was so fortunate as to attend as one of the delegates from our country, the voluntary attendance of the women delegates from Japan, New Zealand, and Australia aroused the admiration of the other members, because these delegates went to the conference at their own expense. This admiration increased when we learned that some of the Japanese delegates could neither understand nor speak English. They said that by simply watching they would learn something.

I am sure that many members of the medical profession of our country can go to any conference at their own expense, provided they are recognized as official delegates from the Islands. I am sure that their love of country, the great benefits that they will surely reap, and the rest they will enjoy during the trip will sufficiently reward them for the expense incurred.

However, should the Government be willing to expend for the delegates from the Philippines, so much the better.

Let us, then, hope that we will have at least a half-dozen delegates, volunteer and otherwise, not only to the Pan-Pacific Surgical Conference in August, 1929, 14 to 24, and to the scientific meeting of Tropical Medicine, but to the various medical congresses of the world.

Surgeons Attending the Pan-Pacific Surgical Conference, Honolulu, August 14 to 24, 1929

Under Auspices of The Pan-Pacific Union.

Australia
Sir James Barrett, Melbourne;
Richard Francis, Sydney;
R. I. Furber, Sydney;
Harry Harris, Sydney;
Prof. W. A. Osborne, Melbourne;
Robert Pulleine, Adelaide;
Norman Royle, Sydney;
Robert Hamilton Russell, Melbourne;
H. H. Schlink,
Prof. Watson, Adelaide;
Ralph Worrall, Sydney.

Canada
F. T. Campbell, Calgary, Alberta;
R. E. McKechnie, Vancouver;
A. R. Munroe, Edmonton.

China—Kenelm H. Digby, Hong Kong;
F. C. Yen, Shanghai.

India Major E. O'G. Kirwan, Calcutta.

Japan—Makoto Saito, Nagoya.
Prof. Teishin Seo, Sen-Dai.

Korea—Y. S. Lee, Seoul.

Latin America
Liberato Davila, Salvador;
Alfredo Delgado Cornejo, Lima, Peru;
Guillemo E. Munnich, Valparaiso, Chile;
Dr. Neuhas, Lima, Peru;
Edwyn P. Reed, Valparaiso, Chile;
Ernest Zubieta, Panama;

New Zealand
W. P. P. Gordon, Stratford;
James A. Jenkins, Dunedin;
J. Hardie Neil, Auckland;
J. Russell Wells, Ashburton.

North Africa
Palotti Giovanni and confrere, Giado, Italian Tripoli.

Philippine Islands
Jacobo Fajardo, Manila;
B. Aguilar, Manila.

United States Mainland
R. V. Ellis, Ketchikan, Alaska;
H. O. Bames, Los Angeles;
Elmer Belt, Los Angeles;
Frank S. Dolley, Los Angeles;
Ernest C. Fishbaugh, Los Angeles;
William H. Kiger, Los Angeles;
Eugene R. Lewis, Los Angeles;
Stewart Lobingier, Los Angeles;
Lloyd Mills, Los Angeles;
Alfred John Murrieta, Los Angeles;
A. J. Scholl, Los Angeles;
Elliot P. Smart, Los Angeles;
Steele Stewart, Los Angeles;
C. T. Sturgeon, Los Angeles;
John C. Wilson, Los Angeles;
Edwin I. Bartlett, San Francisco;
Le Roy Brooks, San Francisco;
Harold Brunn, San Francisco;
Leo Eloesser, San Francisco;
Edgar L. Gilcreest, San Francisco;
Harrington B. Graham, San Francisco;
Emile Holman, San Francisco;
Frank W. Lynch, San Francisco;
Howard H. Markel, San Francisco;
Stanley H. Mentzer, San Francisco;
H. C. Naffziger, San Francisco;
George W. Pierce, San Francisco;
Emmet Rixford, San Francisco;
E. B. Towne, San Francisco;
James T. Watkins, San Francisco;
Roger Anderson, Seattle;
H. E. Coe, Seattle;
H. J. Davidson, Seattle;
C. F. Eikenbary, Seattle;
Frederick Epplen, Seattle;
C. E. Hagyard, Seattle;
David C. Hall, Seattle;
Alex. B. Hepler, Seattle;
E. O. Jones, Seattle;
Brien T. King, Seattle;
O. F. Lamson, Seattle;
A. O. Loe, Seattle;
Minor T. Lisle, Seattle;
Tate Mason, Seattle;
J. C. Moore, Seattle;
Don H. Palmer, Seattle;
Alexander Peacock, Seattle;
William Speidel, Seattle;
George W. Swift, Seattle;
A. T. Wanamaker, Seattle;
J. A. Weber, Seattle;
H. J. Wyckoff, Seattle;
M. T. MacEachern, Chicago;
Charles Mix, Chicago;
Dr. Walch, Chicago;
O. R. Gullion, Eugene, Oregon;
Sam Caldbick, Everett, Washington;
R. H. Quigley, Everett, Washington;
Fred H. Albee, New York City;
John Ridlon, New York City;
Dr. J. E. M. Thomson, Lincoln, Nebraska;
C. Jeff Miller, New Orleans, Louisiana;
L. L. Goodnow, Olympia, Washington;
C. D. Lockwood, Pasadena, California;
A. G. Bettman, Portland, Oregon;
Robert C. Coffey, Portland, Oregon;
J. Earl Else, Portland, Oregon;
Ralph Fenton, Portland, Oregon;
Thomas M. Joyce, Portland, Oregon;
Ralph Matson, Portland, Oregon;
George Norman Pease, Portland, Oregon;
Paul Rockey, Portland, Oregon;
Ernest A. Sommer, Portland, Oregon;
John S. Lundy, Rochester, Minnesota;
M. C. Findley, Salem, Oregon;
Thomas O. Burger, San Diego, California;
Samuel Robinson, Santa Barbara, Calif.;
Arthur Cunningham, Spokane, Wash.;
Horace J. Whitacre, Tacoma, Wash.;
C. J. Johannesson, Walla Walla, Wash.;
John C. Lyman, Walla Walla, Wash.;
Frederick L. Hoffman, Wellesley Hills, Massachusetts;